20070710.133156630

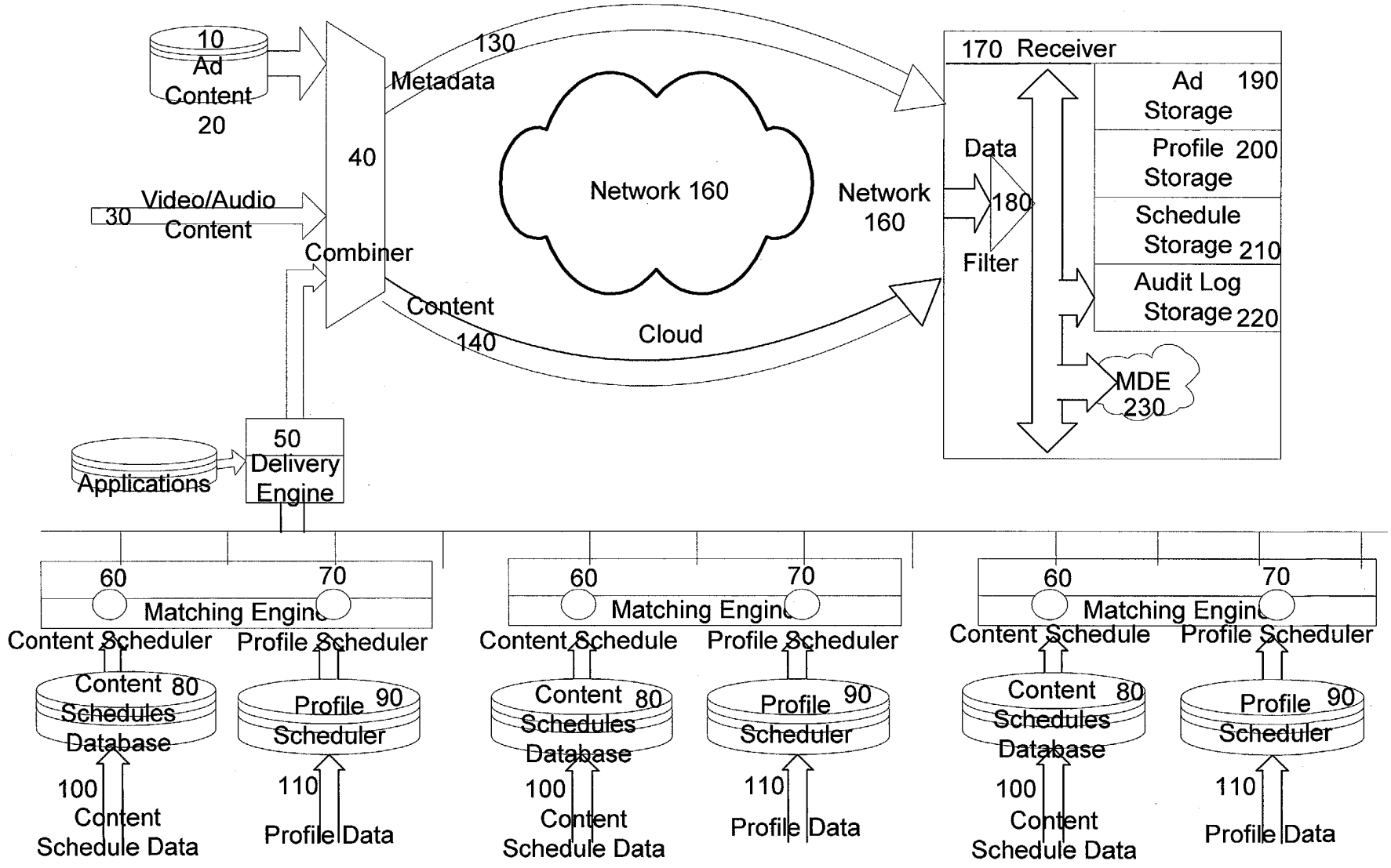

Figure 1

APPLICANT: STEPHEN [redacted] ASCO ET AL.
TITLE: METHOD AND S[redacted]EM FOR DATAFLOW MANAGEMENT IN A COMM[redacted]CATIONS NETWORK
ATTORNEY/AGENT: KENT J. SIEFFERT
REG. NO. 41,312 TELEPHONE: 651.735.1100
DOCKET NO.: 1028-009US01 SHEET 1 OF 11

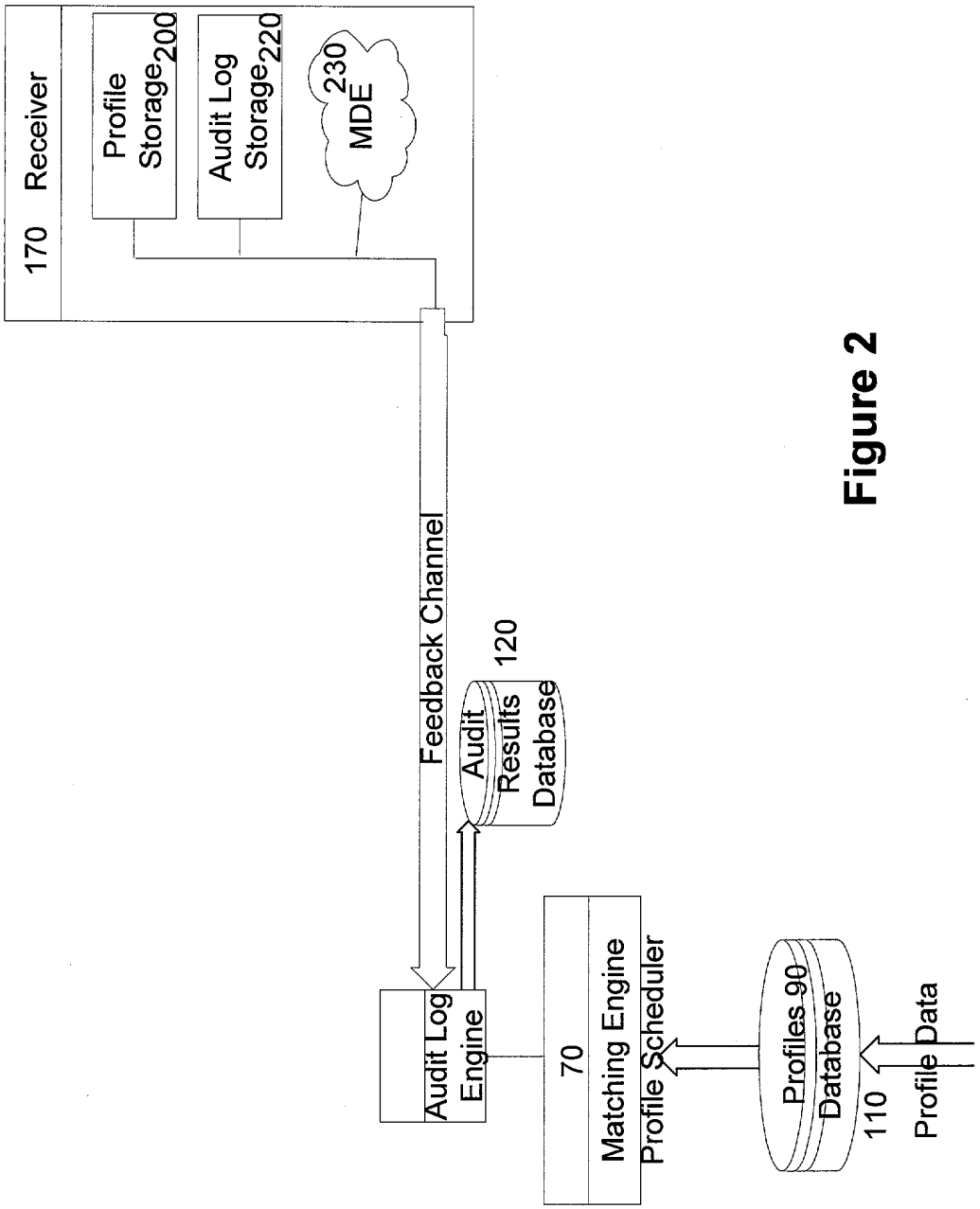
170 Receiver
Profile Storage 200
Audit Log Storage 220
230 MDE
Feedback Channel
Audit Results Database 120
Audit Log Engine
70 Matching Engine Profile Scheduler
Profiles 90 Database
110
Profile Data

Figure 2

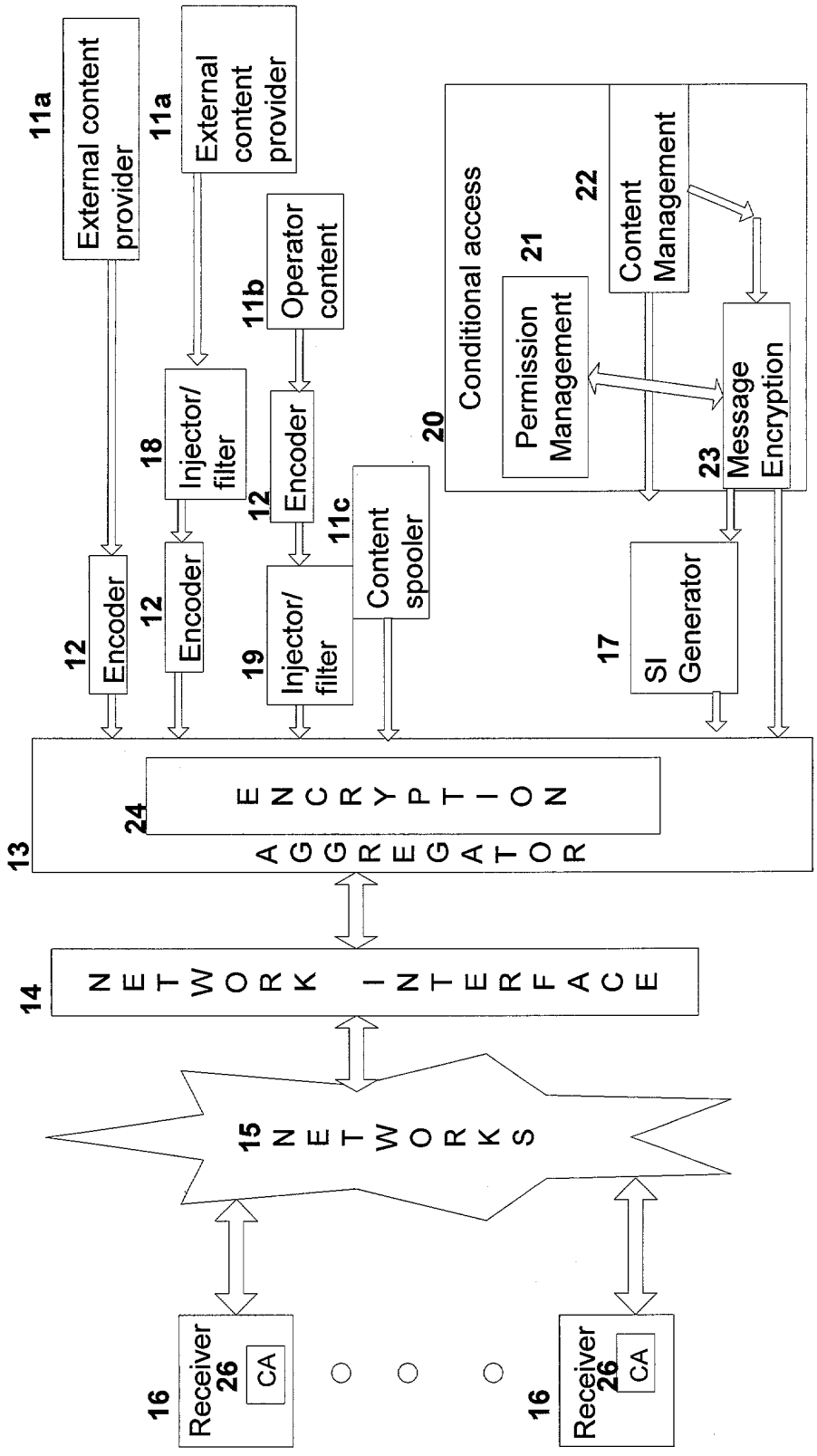
11a
External content provider
11a
External content provider
11b
Operator content
Conditional access
20
21
Permission Management
22
Content Management
18
Injector/ filter
12
Encoder
11c
Content spooler
23
Message Encryption
12
Encoder
12
Encoder
19
Injector/ filter
17
SI Generator
13
AGGREGATOR
24
ENCRYPTION
14
NETWORK INTERFACE
15
NETWORKS
16
Receiver
26
CA
16
Receiver
26
CA

Figure 3

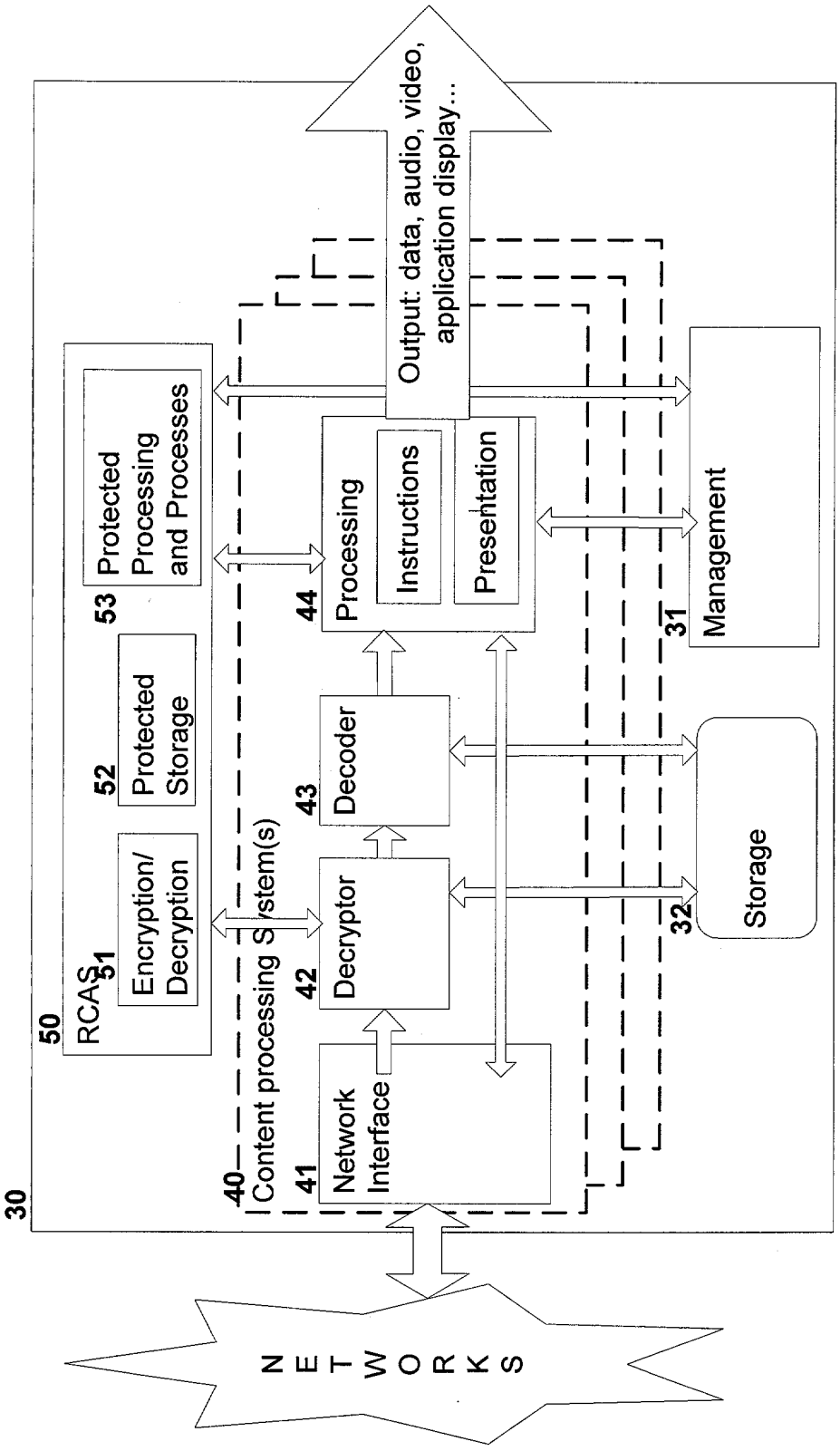
30
Output: data, audio, video, application display...
50
RCAS
51
Encryption/ Decryption
52
Protected Storage
53
Protected Processing and Processes
40
Content processing System(s)
41
Network Interface
42
Decryptor
43
Decoder
44
Processing
Instructions
Presentation
31
Management
32
Storage
NETWORKS

Figure 4

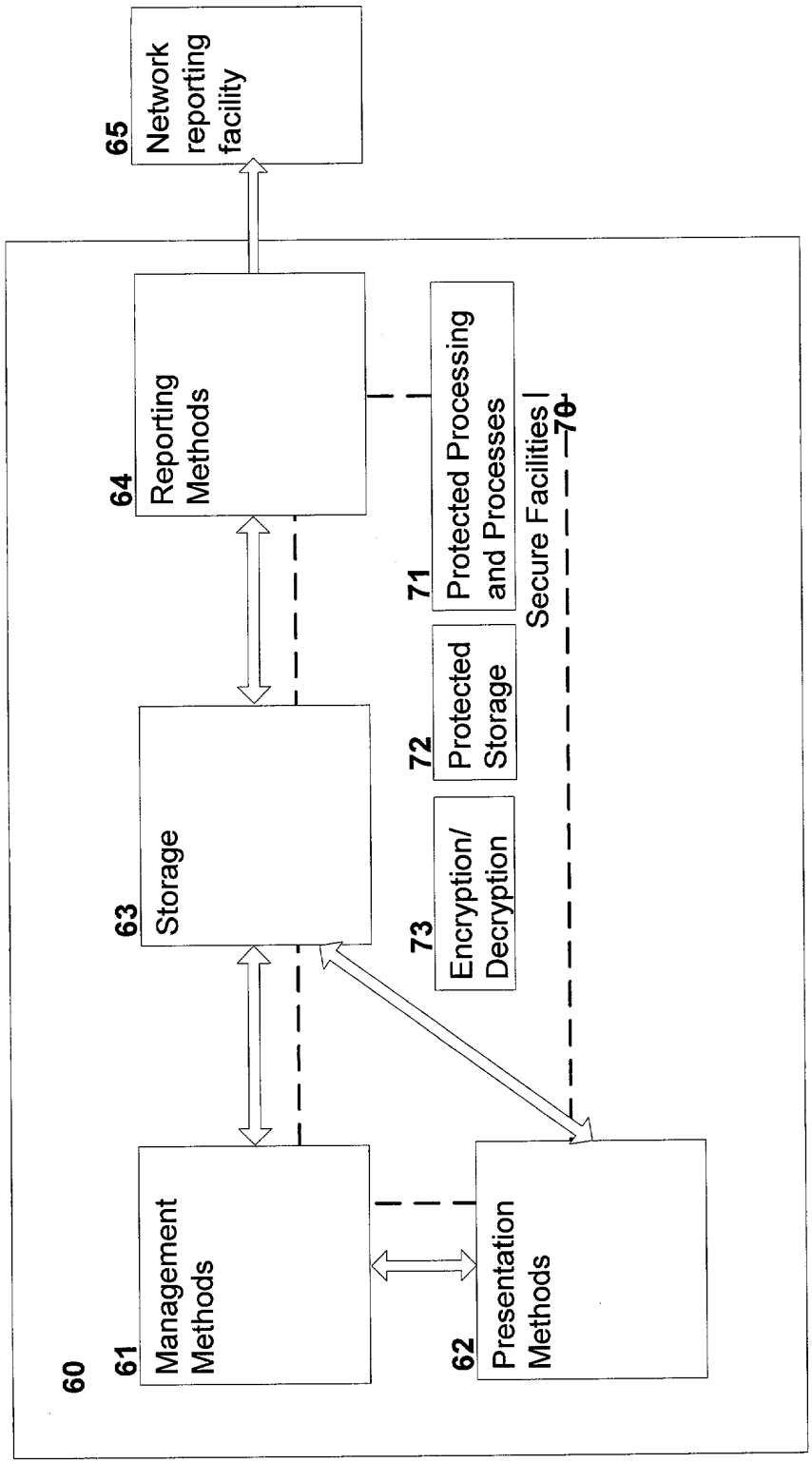
65
Network reporting facility
64
Reporting Methods
71
Protected Processing and Processes
Secure Facilities
70
72
Protected Storage
63
Storage
73
Encryption/ Decryption
60
61
Management Methods
62
Presentation Methods

Figure 5

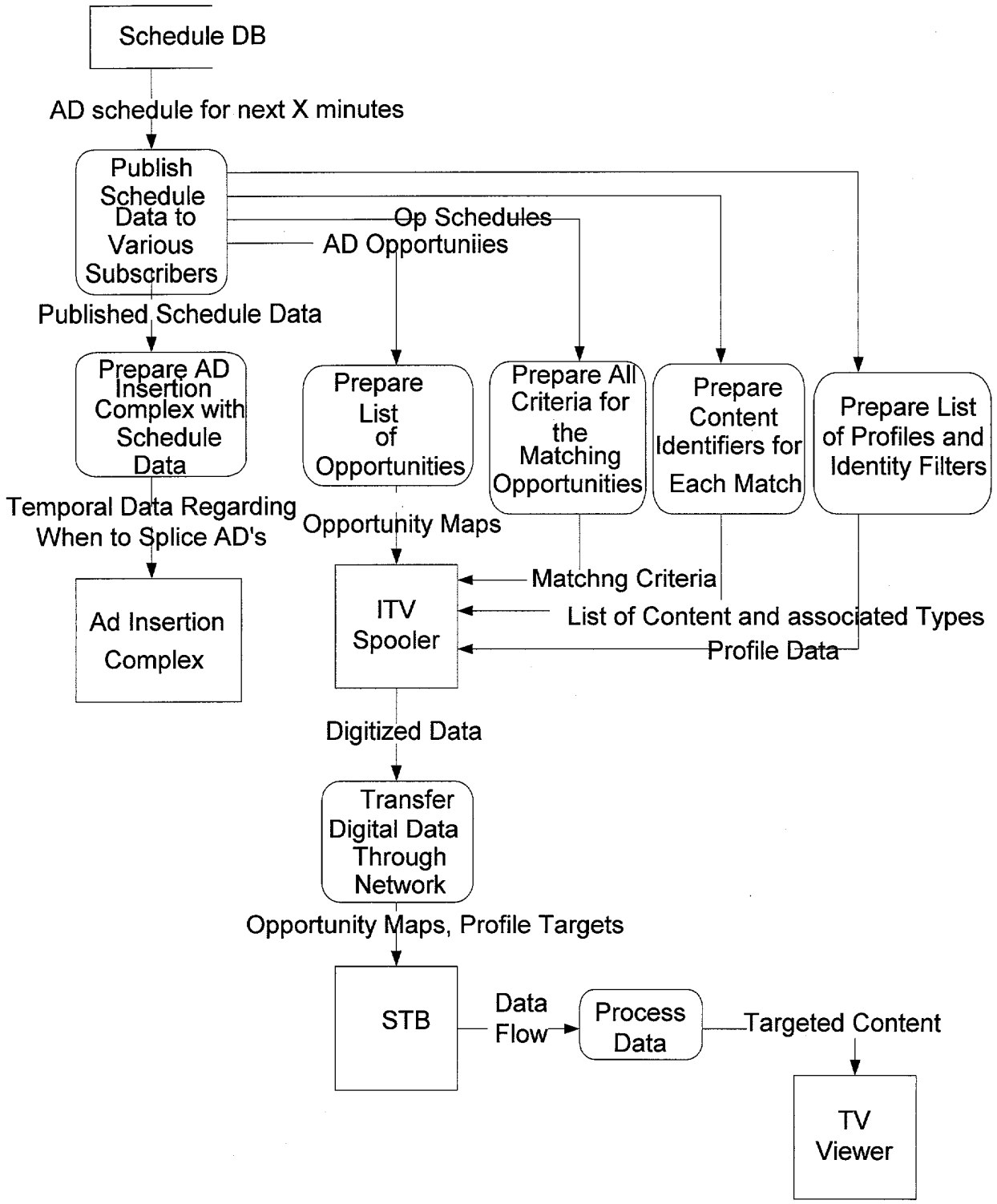
Schedule DB
AD schedule for next X minutes
Publish Schedule Data to Various Subscribers
Op Schedules
AD Opportuniies
Published Schedule Data
Prepare AD Insertion Complex with Schedule Data
Prepare List of Opportunities
Prepare All Criteria for the Matching Opportunities
Prepare Content Identifiers for Each Match
Prepare List of Profiles and Identity Filters
Temporal Data Regarding When to Splice AD's
Opportunity Maps
Matchng Criteria
List of Content and associated Types
Profile Data
Ad Insertion Complex
ITV Spooler
Digitized Data
Transfer Digital Data Through Network
Opportunity Maps, Profile Targets
STB
Data Flow
Process Data
Targeted Content
TV Viewer

Figure 6

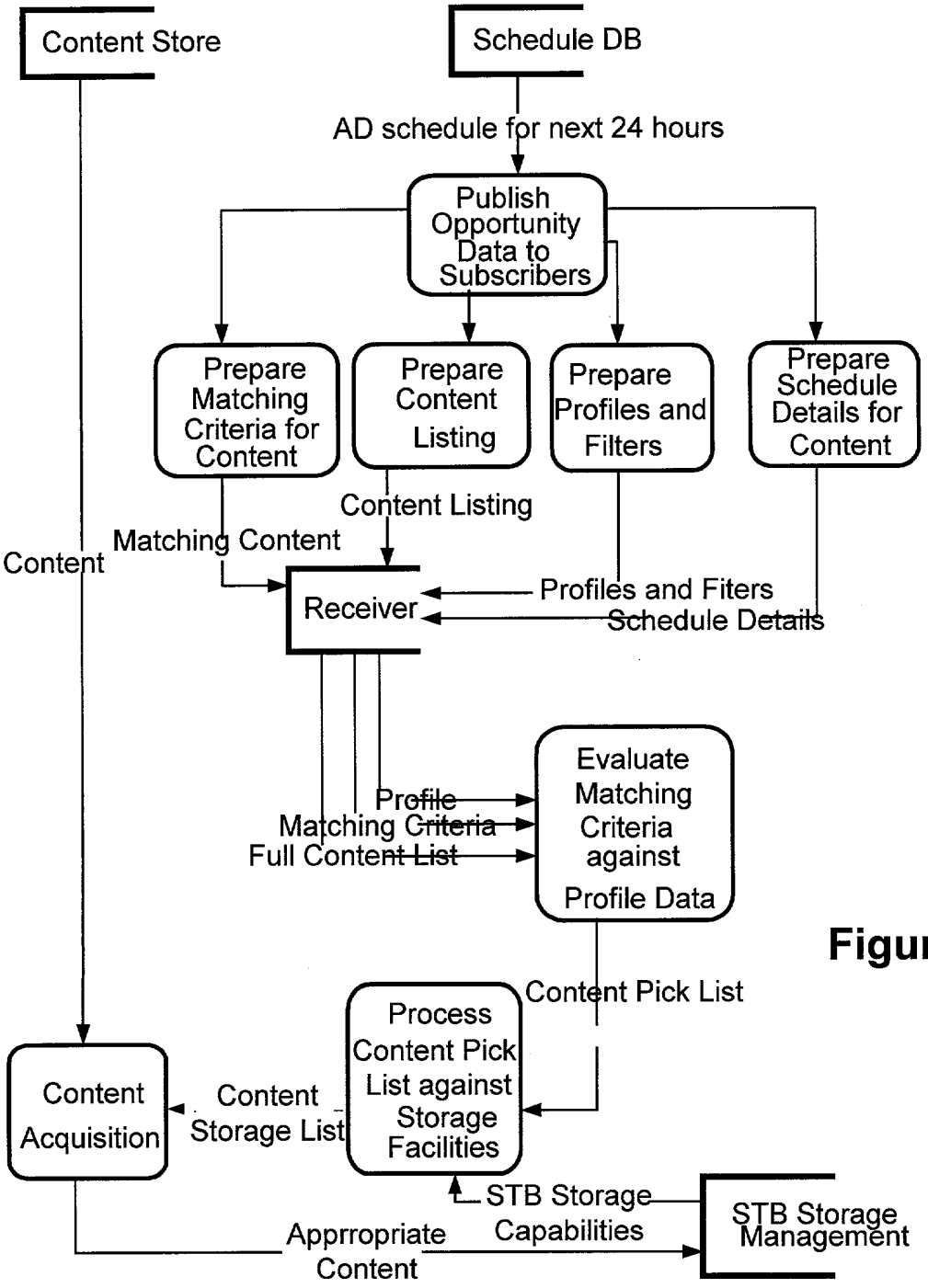
Content Store
Schedule DB
AD schedule for next 24 hours
Publish Opportunity Data to Subscribers
Prepare Matching Criteria for Content
Prepare Content Listing
Prepare Profiles and Filters
Prepare Schedule Details for Content
Content Listing
Matching Content
Content
Receiver
Profiles and Fiters
Schedule Details
Profile
Matching Criteria
Full Content List
Evaluate Matching Criteria against Profile Data
Content Pick List
Process Content Pick List against Storage Facilities
Content Acquisition
Content Storage List
STB Storage Capabilities
STB Storage Management
Apprropriate Content

Figure 7

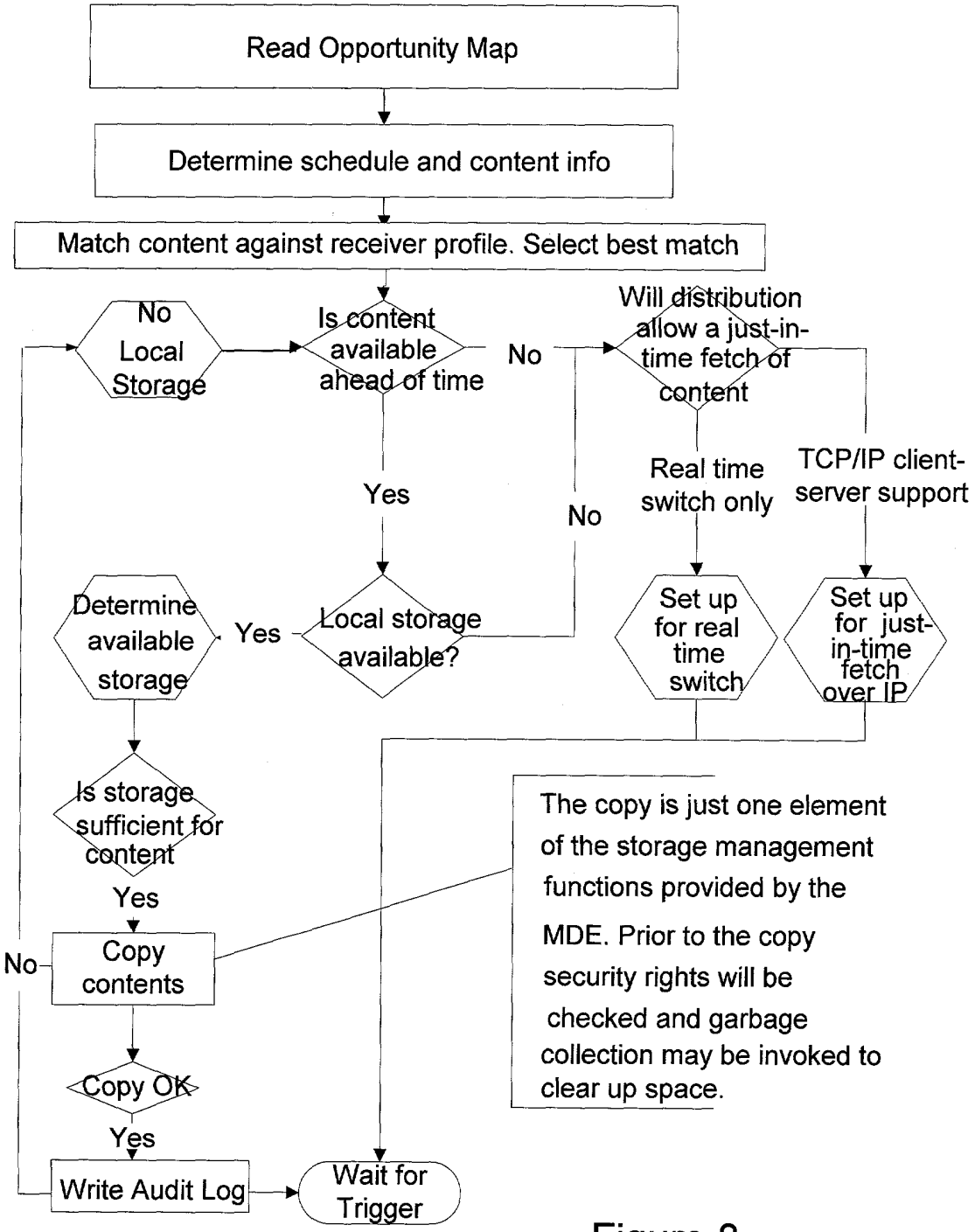
Read Opportunity Map
Determine schedule and content info
Match content against receiver profile. Select best match
No Local Storage
Is content available ahead of time
No
Will distribution allow a just-in-time fetch of content
Yes
No
Real time switch only
TCP/IP client-server support
Determine available storage
Yes
Local storage available?
Set up for real time switch
Set up for just-in-time fetch over IP
Is storage sufficient for content
Yes
No
Copy contents
Copy OK
Yes
Write Audit Log
Wait for Trigger
The copy is just one element of the storage management functions provided by the MDE. Prior to the copy security rights will be checked and garbage collection may be invoked to clear up space.

Figure 8

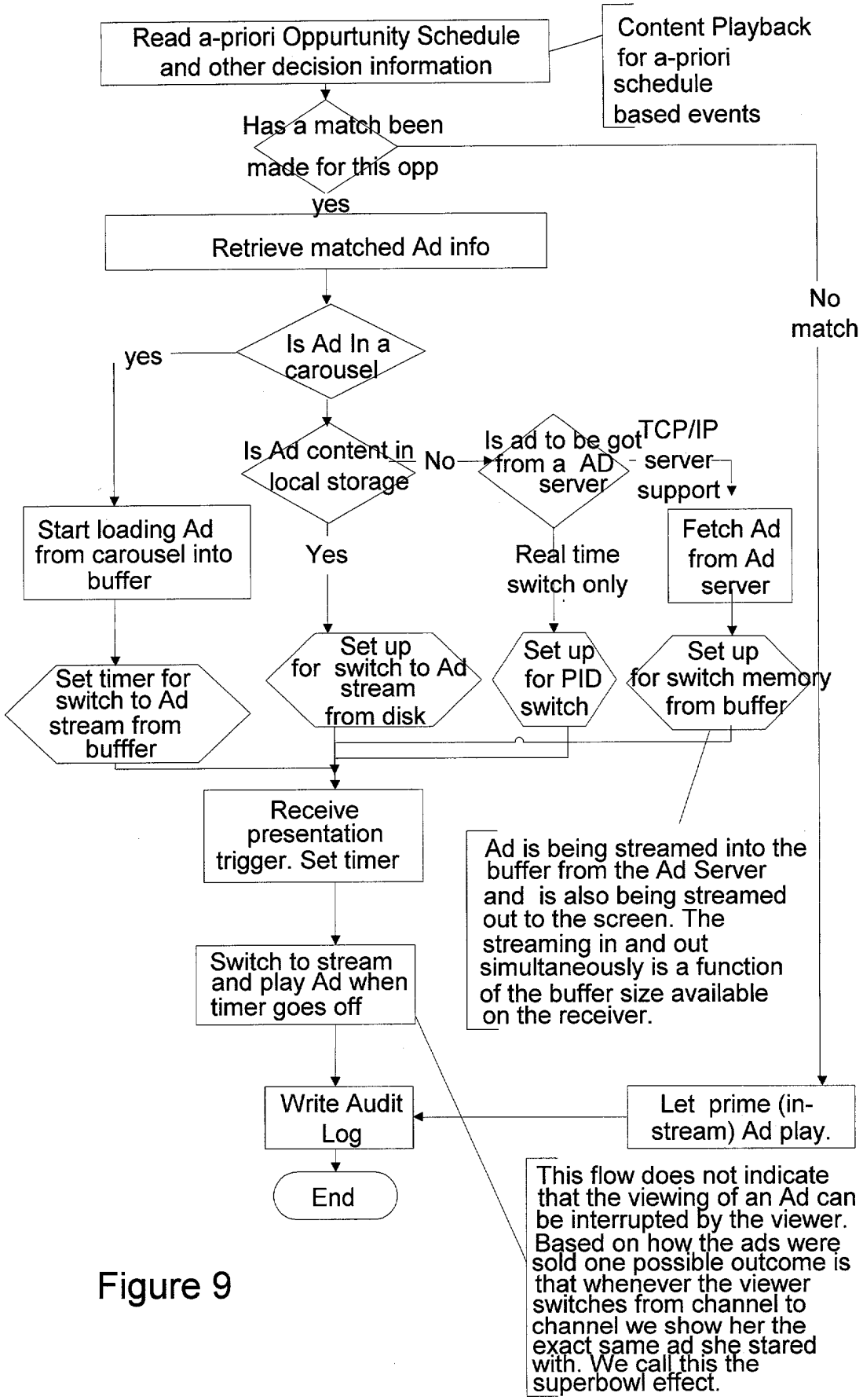
Read a-priori Oppurtunity Schedule and other decision information
Content Playback for a-priori schedule based events
Has a match been made for this opp
yes
No match
Retrieve matched Ad info
Is Ad In a carousel
yes
Is Ad content in local storage
No
Is ad to be got from a AD server
TCP/IP server support
Start loading Ad from carousel into buffer
Yes
Real time switch only
Fetch Ad from Ad server
Set timer for switch to Ad stream from bufffer
Set up for switch to Ad stream from disk
Set up for PID switch
Set up for switch memory from buffer
Receive presentation trigger. Set timer
Ad is being streamed into the buffer from the Ad Server and is also being streamed out to the screen. The streaming in and out simultaneously is a function of the buffer size available on the receiver.
Switch to stream and play Ad when timer goes off
Write Audit Log
Let prime (in-stream) Ad play.
End
This flow does not indicate that the viewing of an Ad can be interrupted by the viewer. Based on how the ads were sold one possible outcome is that whenever the viewer switches from channel to channel we show her the exact same ad she stared with. We call this the superbowl effect.

Figure 9

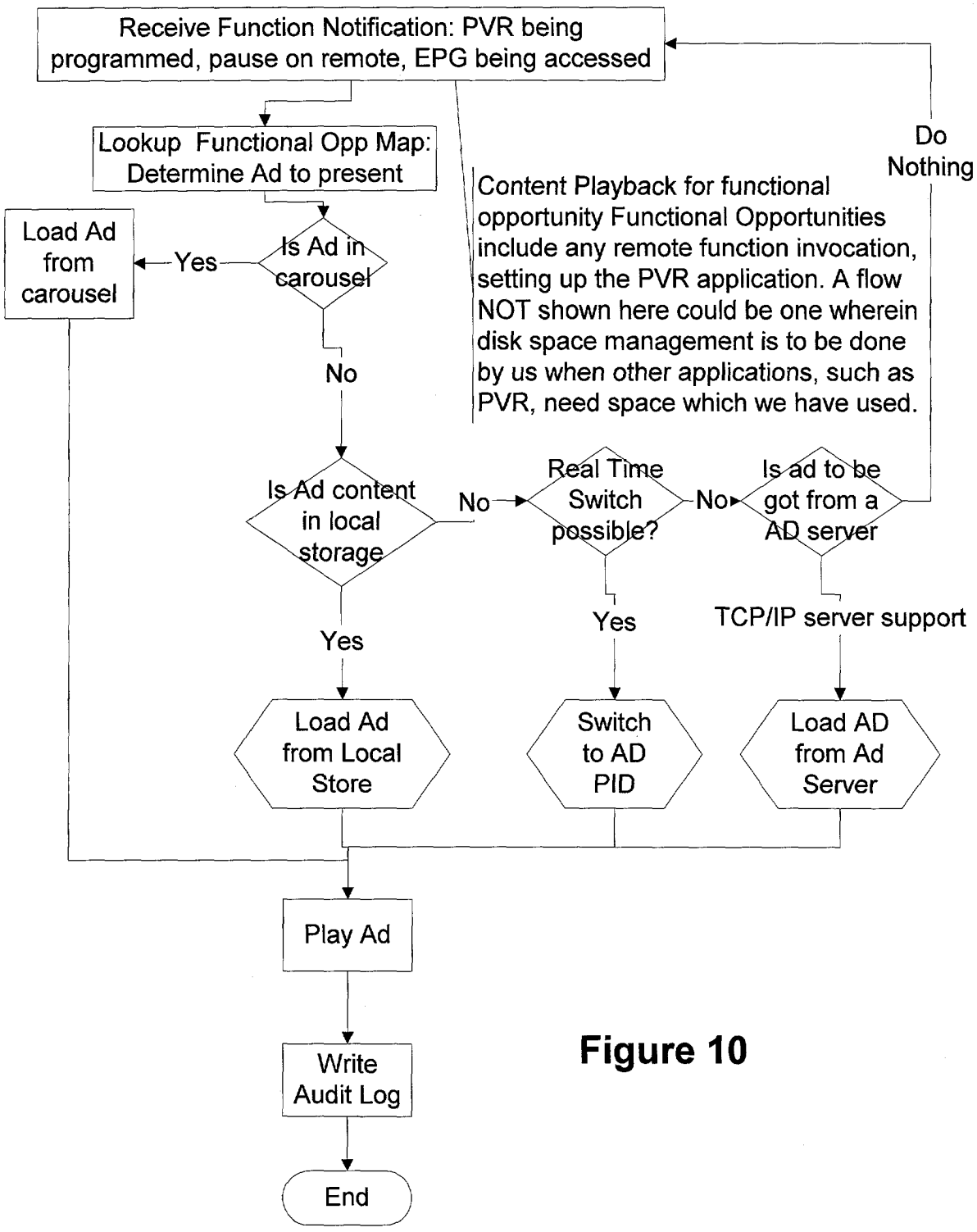
Receive Function Notification: PVR being programmed, pause on remote, EPG being accessed
Lookup Functional Opp Map: Determine Ad to present
Load Ad from carousel
Yes
Is Ad in carousel
No
Content Playback for functional opportunity Functional Opportunities include any remote function invocation, setting up the PVR application. A flow NOT shown here could be one wherein disk space management is to be done by us when other applications, such as PVR, need space which we have used.
Do Nothing
Is Ad content in local storage
No
Real Time Switch possible?
No
Is ad to be got from a AD server
Yes
TCP/IP server support
Yes
Load Ad from Local Store
Switch to AD PID
Load AD from Ad Server
Play Ad
Write Audit Log
End

Figure 10

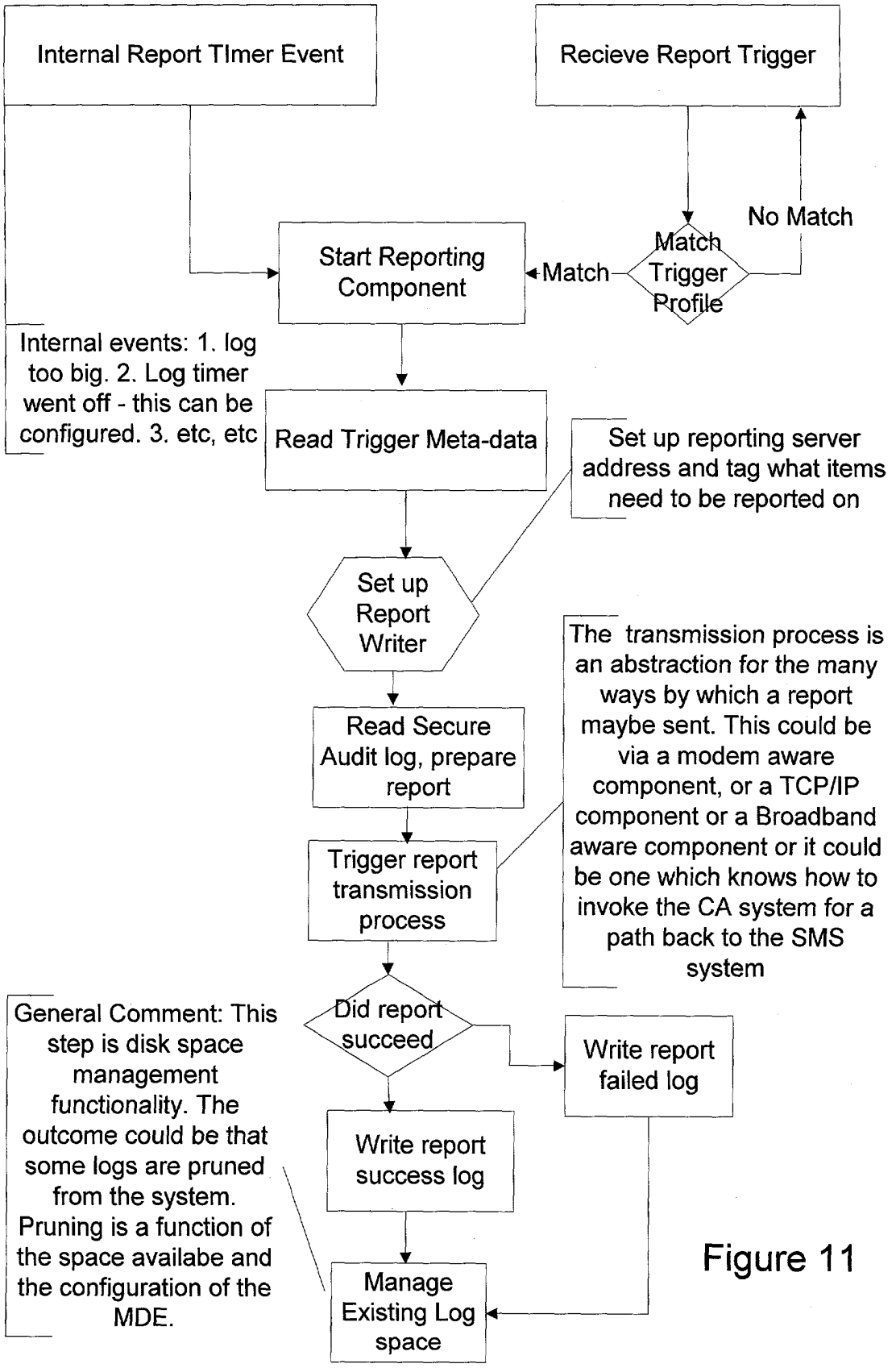
Internal Report TImer Event
Recieve Report Trigger
No Match
Start Reporting Component
Match
Match Trigger Profile
Internal events: 1. log too big. 2. Log timer went off - this can be configured. 3. etc, etc
Read Trigger Meta-data
Set up reporting server address and tag what items need to be reported on
Set up Report Writer
Read Secure Audit log, prepare report
The transmission process is an abstraction for the many ways by which a report maybe sent. This could be via a modem aware component, or a TCP/IP component or a Broadband aware component or it could be one which knows how to invoke the CA system for a path back to the SMS system
Trigger report transmission process
Did report succeed
Write report failed log
General Comment: This step is disk space management functionality. The outcome could be that some logs are pruned from the system. Pruning is a function of the space availabe and the configuration of the MDE.
Write report success log
Manage Existing Log space

Figure 11